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1966 OPERATING SUMMARY

GEORGETOWN

water pollution control plant

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ONTARIO WATER RESOURCES COMMISSION
Division of Plant Operations

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ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Georgetown Local Advisory Committee,
Town of Georgetown.

Gentlemen:

We are pleased to submit to you the 1966 Operating Summary for the Georgetown Water Pollution Control Plant, OWRC Projects Nos. 58-S-17 and 61-S-77.

It is hoped that our joint participation in efforts to combat water pollution will have even more success in the coming year.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly", is written over the typed name.

D. S. Caverly,
General Manager.

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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

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VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1966 Operating Summary for the Georgetown Water Pollution Control Plant, OWRC Project Nos. 58-S-17 and 61-S-77.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

A handwritten signature in cursive script, appearing to read "B. C. Palmer".

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary contains complete information on the management of the project during 1966. It contains a concise review of the year's plant operation, significant financial details, and a visual presentation in graphs and charts of technical performance.

The information will be of value to interested parties in assessing the adequacy of the project at this time and its ability to meet future requirements.

The report is the result of co-operation by several groups within the Division of Plant Operations. These include the statistics section and the technical publications section. The Division of Finance and the draughting section of the Division of Sanitary Engineering were also closely associated with its publication.

The Regional Operations Engineer, however, has had the primary responsibility for the content, and will be happy to answer any questions regarding it.

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GEORGETOWN
water pollution control plant

operated for

THE TOWN OF GEORGETOWN

by the

ONTARIO WATER RESOURCES COMMISSION

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Assistant Director:	C. W. Perry
Regional Supervisor:	D. A. McTavish
Operations Engineer:	B. W. Hansler

801 Bay Street Toronto 5

'66 REVIEW

A total of 363.471 million gallons of sewage was treated during the year at a total operating cost of \$38,306.82. The operating cost per million gallons and the cost per pound of BOD removed were \$105.39 and \$0.15 respectively.

The average daily flow was 0.995 million gallons, an increase of 4.7 percent from the previous year. Daily flows exceeded the design flow 7 percent of the time.

The average raw sewage BOD and suspended solids concentrations of 88 ppm and 210 ppm respectively and the volatile solids of 52.8 percent in the raw sludge indicates that the raw sewage contains a large amount of inert material. Industrial wastes received at the plant were the major contributing factor. This clay has increased the amount of sludge removed from the digester and has altered the nature of the activated sludge so that effective removal of suspended matter is curtailed.

Fuel oil, the normal stand-by fuel, was used to heat the primary digester and the buildings. Leakage of gas from both the primary and secondary digesters prevented the accumulation of sufficient gas necessary for heating purposes.

PROJECT COSTS

NET CAPITAL COST (Final)	58-S-17	\$871,677.01	
DEDUCT payments from Municipalities		<u>48,379.33</u>	
Long Term Debt to OWRC			\$823,297.68
NET CAPITAL COST (Final)	61-S-77	\$ 63,230.31	
DEDUCT Portion Financed by CMHC (Final)		<u>19,072.10</u>	
Long Term Debt to OWRC			\$ <u>44,158.21</u>
Total Long Term Debt to OWRC			<u>\$867,455.89</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1965	58-S-17	\$115,984.44	
	61-S-77	<u>4,188.10</u>	<u>\$120,172.54</u>

	<u>58-S-17</u>	<u>61-S-77</u>	<u>TOTALS</u>
Net Operating	\$ 38,306.82	\$ 25.30	\$ 38,332.12
Debt Retirement	16,614.00	891.00	17,505.00
Reserve	5,289.64	388.66	5,678.30
Interest Charged	<u>46,320.66</u>	<u>2,484.44</u>	<u>48,805.10</u>
TOTALS	<u>\$106,531.12</u>	<u>\$3,789.40</u>	<u>\$110,320.52</u>

RESERVE ACCOUNT

	<u>58-S 17</u>	<u>61-S-77</u>	<u>TOTAL</u>
Balance @ Jan. 1, 1966	\$32,541.21	\$1,677.02	\$34,218.23
Deposited by Municipality	5,289.64	388.66	5,678.30
Interest Earned	<u>1,906.21</u>	<u>101.10</u>	<u>2,007.31</u>
	\$39,737.06	\$2,166.78	\$41,903.84
Less Expenditures	<u>668.17</u>	<u>-</u>	<u>668.17</u>
Balance at Dec. 31, 1966	<u><u>\$39,068.89</u></u>	<u><u>\$2,166.78</u></u>	<u><u>\$41,235.67</u></u>

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY
JAN	2090.50	1216.58	245.28	106.46			61.51	1.71	161.74	297.22
FEB	2754.35	1215.97	242.07	203.05	330.35	224.03	140.09		(8.09)	406.88
MARCH	2564.26	1216.58		141.00	284.83		78.84	86.00	400.90	356.11
APRIL	2978.25	2072.77		152.99	274.90	224.03	61.09		105.20	87.27
MAY	1817.80	1269.58		83.48	268.79		50.88		89.96	55.11
JUNE	4251.78	1394.94	209.14	105.33	286.41	118.13	69.05		24.12	2044.66
JULY	2491.00	1254.22	274.16	108.43	227.96	114.19	90.52		330.40	85.12
AUG	2736.67	1254.22	273.55	109.42	189.06	342.57	58.95		431.07	77.83
SEPT	3799.96	1867.71	417.53	115.62	233.71		155.22		10.37	999.80
OCT	2412.87	1257.73	272.50	174.13	260.76	228.38	72.79	38.02	41.03	67.53
NOV	4467.04	1252.13	281.57	59.52	262.09	228.38	213.67	114.63	1057.15	997.90
DEC	5942.34	1247.44		334.72	704.45		258.32	87.05	1037.68	2272.68
TOTAL	38306.82	16519.87	2215.80	1694.15	3323.31	1479.71	1310.93	327.41	3687.53	7748.11

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$4411.80

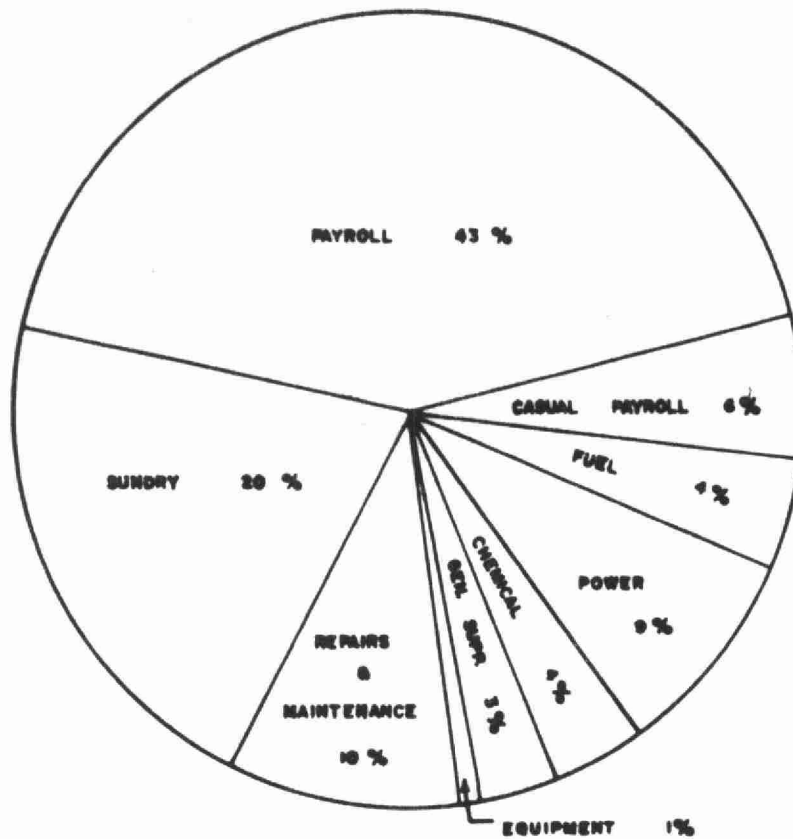
BRACKETS INDICATE CREDIT

YEARLY OPERATING COSTS

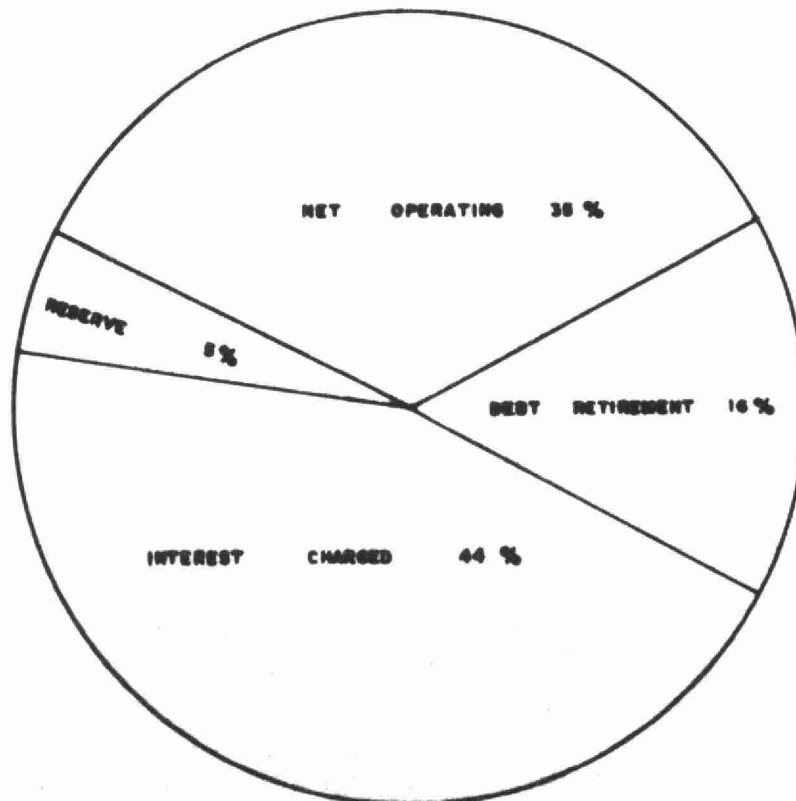
YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1962	351,410	\$22842.71	* \$ 8.35	\$65.00	6 CENTS
1963	325,551	26694.78	9.71	81.63	8 CENTS
1964	307,116	29738.15	10.37	96.82	10 CENTS
1965	346,542	31209.58	10.69	90.06	16 CENTS
1966	363,471	38306.82	13.03	105.39	15 CENTS

* BASED ON ANNUAL POPULATION ESTIMATE AND 3.9 PERSONS PER FAMILY

1966 OPERATING COSTS



TOTAL ANNUAL COSTS (BOTH PROJECTS)



Process Data

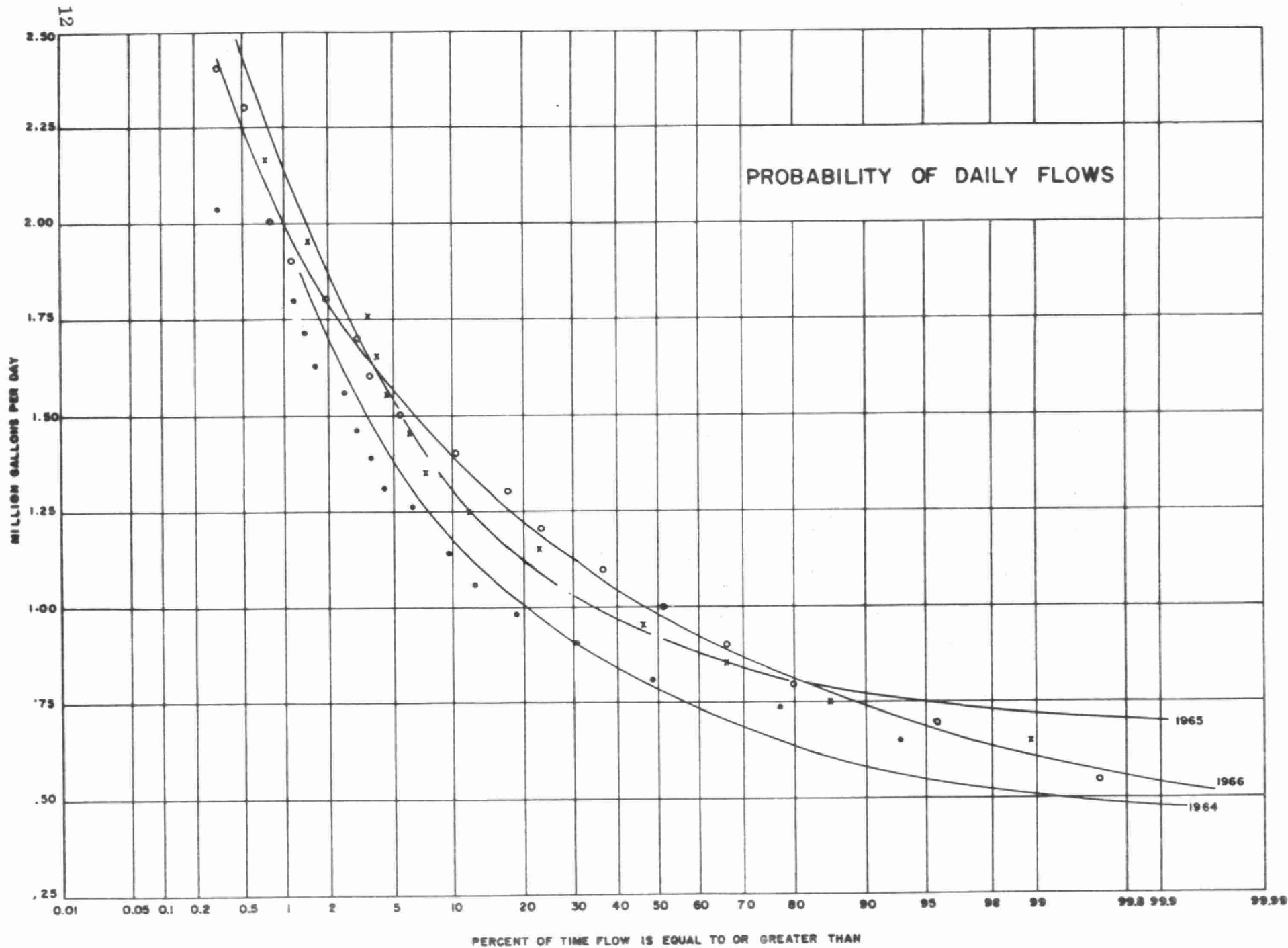
The average daily flow for the year was 0.995 million gallons which is 66% of the design flow. The average flow represents an increase of 4.7% from the previous year. The design flow of 1.5 million gallons per day was exceeded 7% of the time.

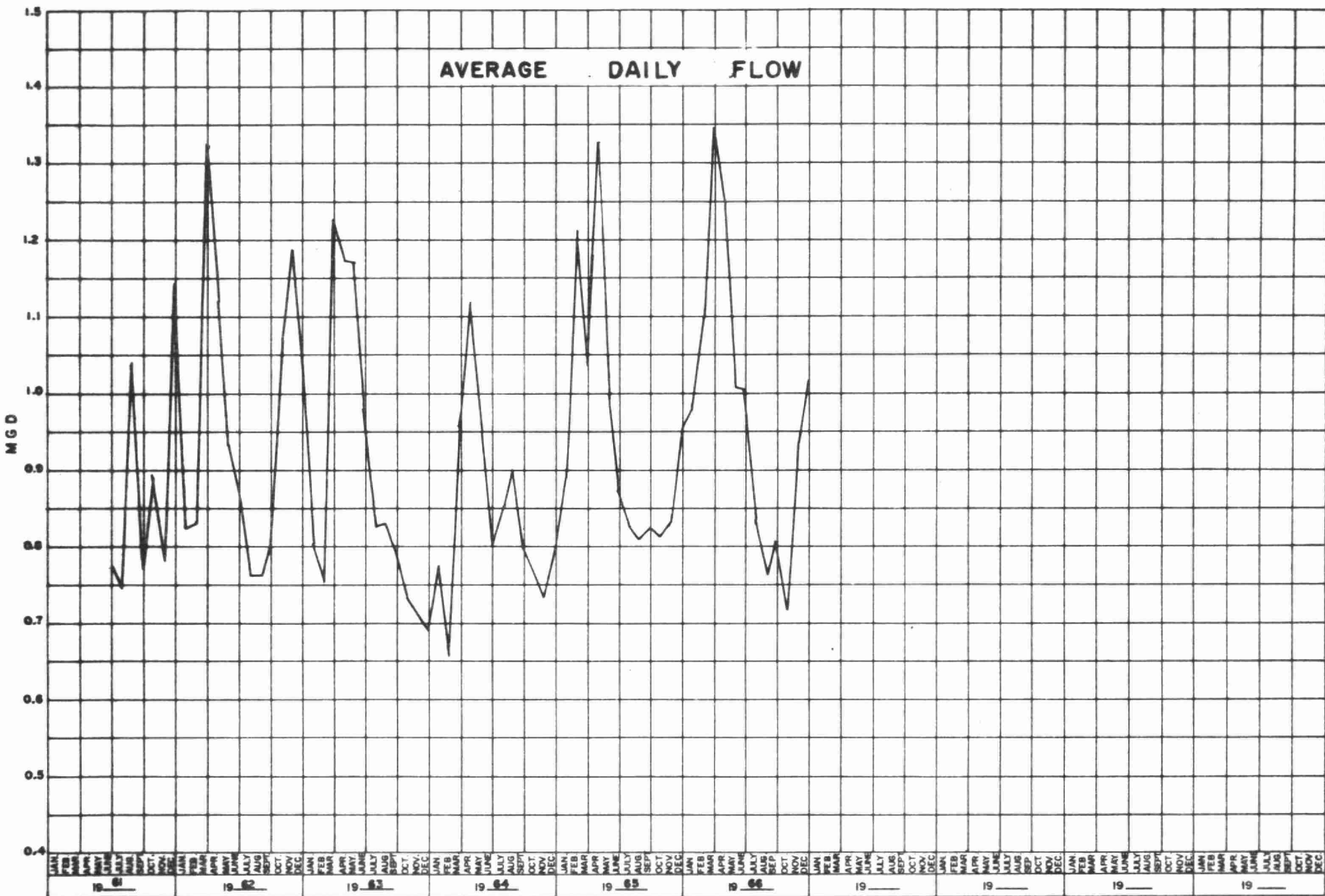
BOD and SUSPENDED SOLIDS

It can be seen from the probability graphs that the raw sewage BOD did not exceed the design value of 200 ppm. The suspended solids concentration of the raw sewage exceeded the design value of 200 ppm 59% of the time.

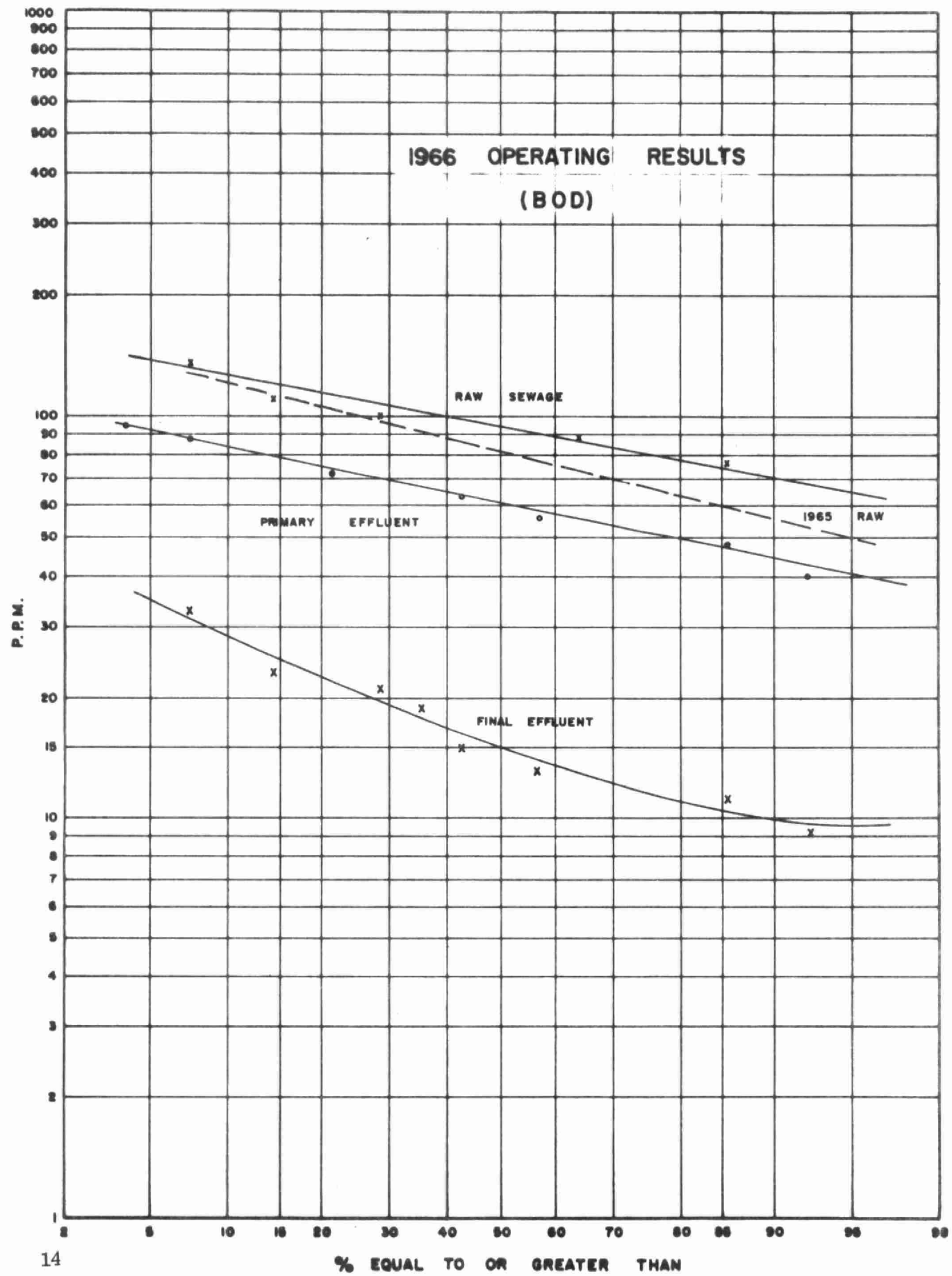
The average raw sewage BOD and suspended solids concentrations of 88 ppm and 210 ppm respectively indicates that the influent contains a large proportion of inorganic matter. The major contributing factor was an industrial waste containing a clay-like substance.

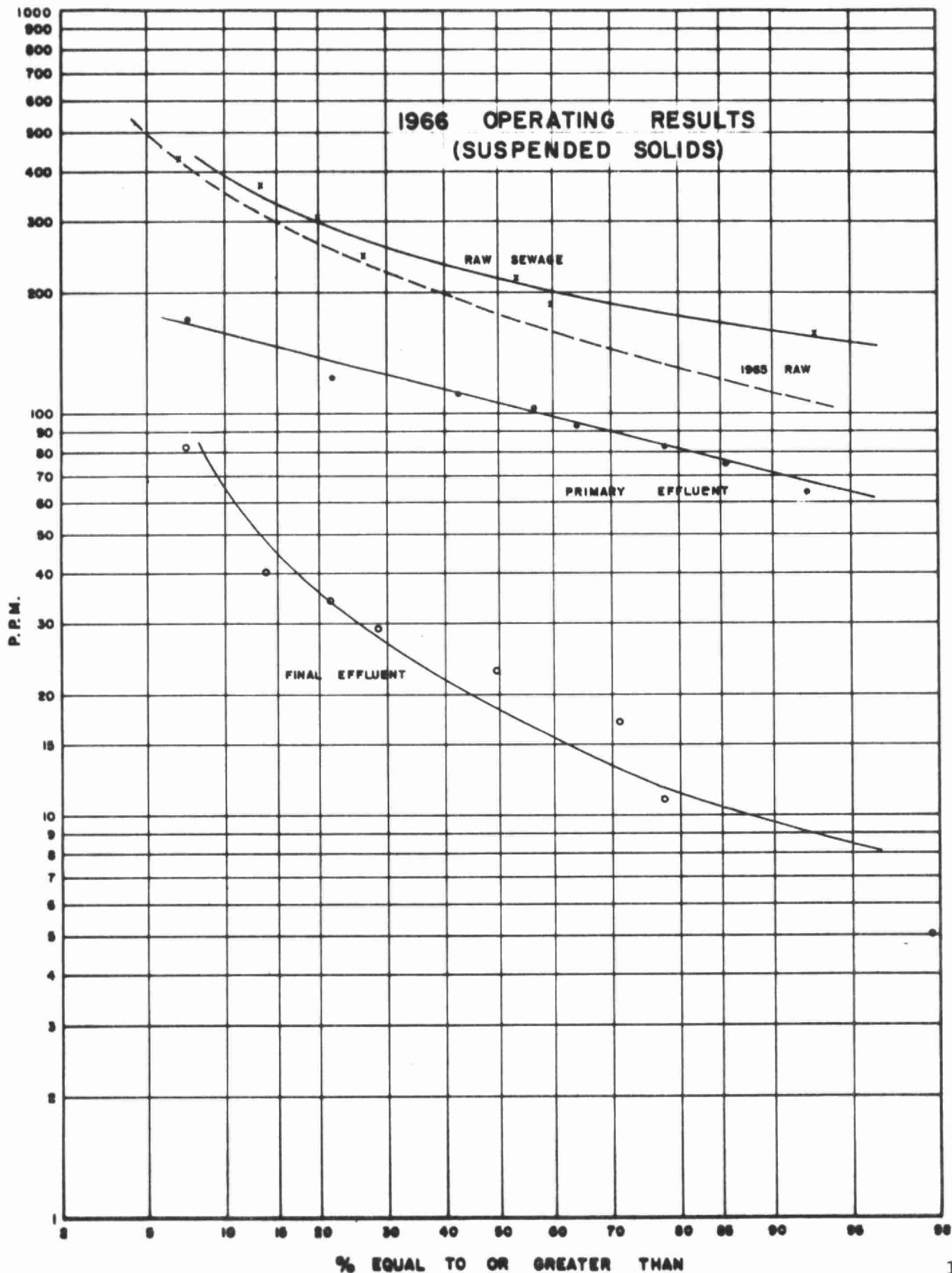
The plant effluent BOD and suspended solids concentrations exceeded the OWRC objective of 15 ppm for each 40% and 65% of the time respectively.

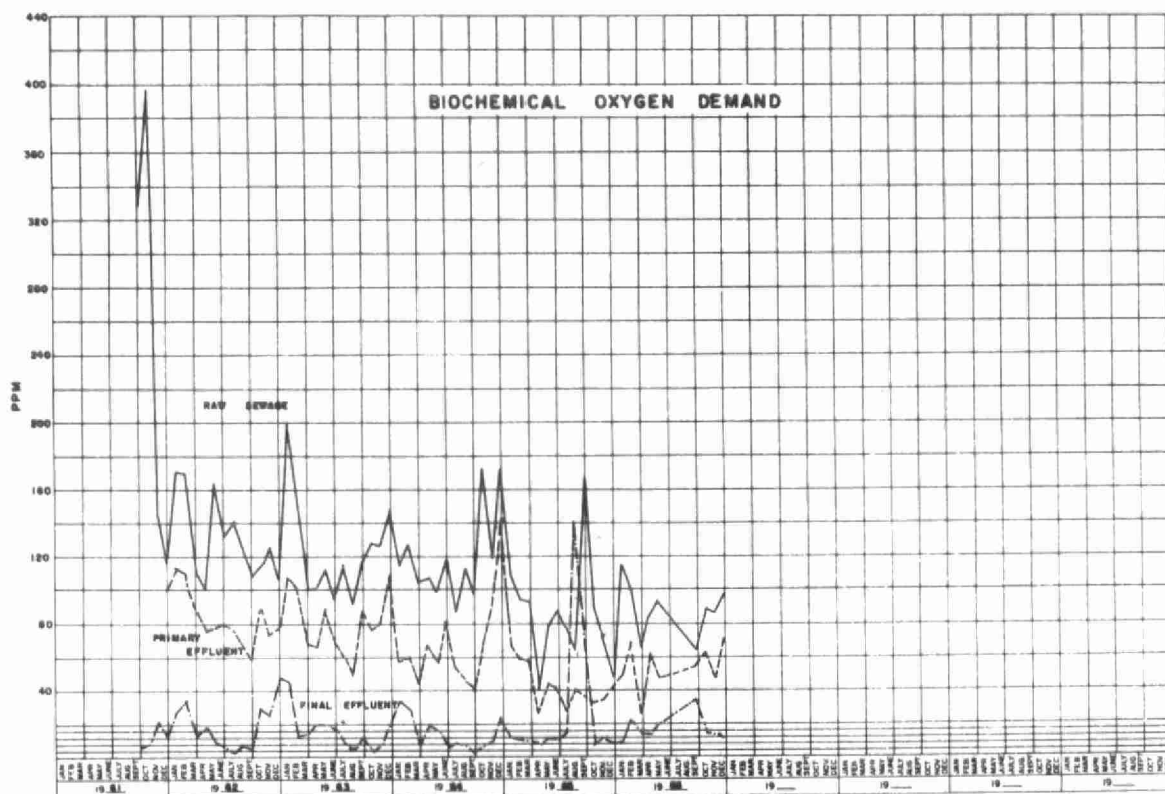




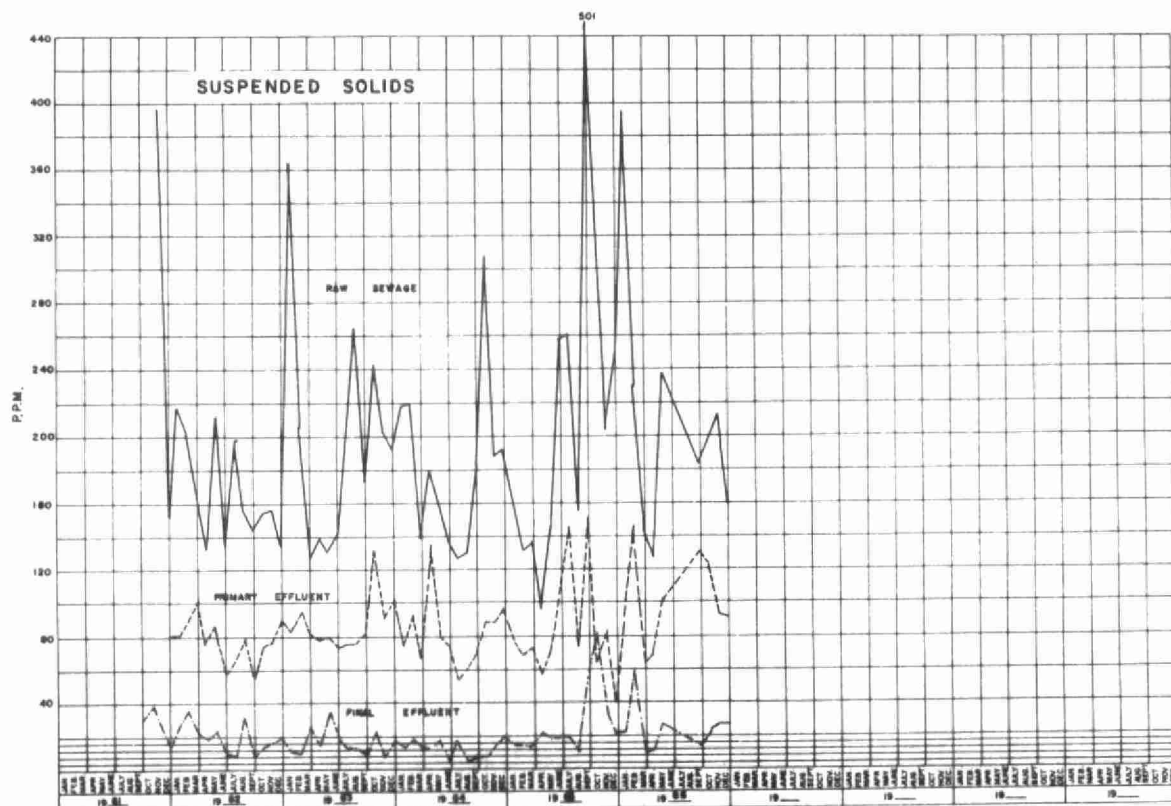
1966 OPERATING RESULTS (BOD)







MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	114	11	90.5	15.6	395	22	94.5	56.6	12.8
FEB.	99	22	77.5	12.0	228	60	73.5	26.2	20.2
MAR.	65	14	78.5	10.8	254	8	95.0	30.9	28.3
APR.	85	11	87.0	14.2	127	12	90.5	22.1	9.2
MAY	92	19	79.5	12.4	238	26	89.0	35.9	47.4
JUNE	* 88	16	82.0	11.6	*210	24	88.5	29.9	21.0
JULY	* 88	16	82.0	9.3	*210	24	88.5	24.0	19.2
AUG.	* 88	16	82.0	8.4	*210	24	88.5	21.8	18.0
SEPT.	64	33	48.0	3.7	182	13	93.0	20.4	8.0
OCT.	88	13	85.0	8.3	196	22	88.5	19.4	4.0
NOV.	85	13	84.5	10.1	212	27	87.5	25.9	46.0
DEC.	96	11	88.5	13.4	160	27	83.0	20.9	32.0
TOTAL	-	-	-	130.8	-	-	-	338.0	266.1
AVG.	88	16	82.0	10.9	210	24	88.5	28.2	22.2

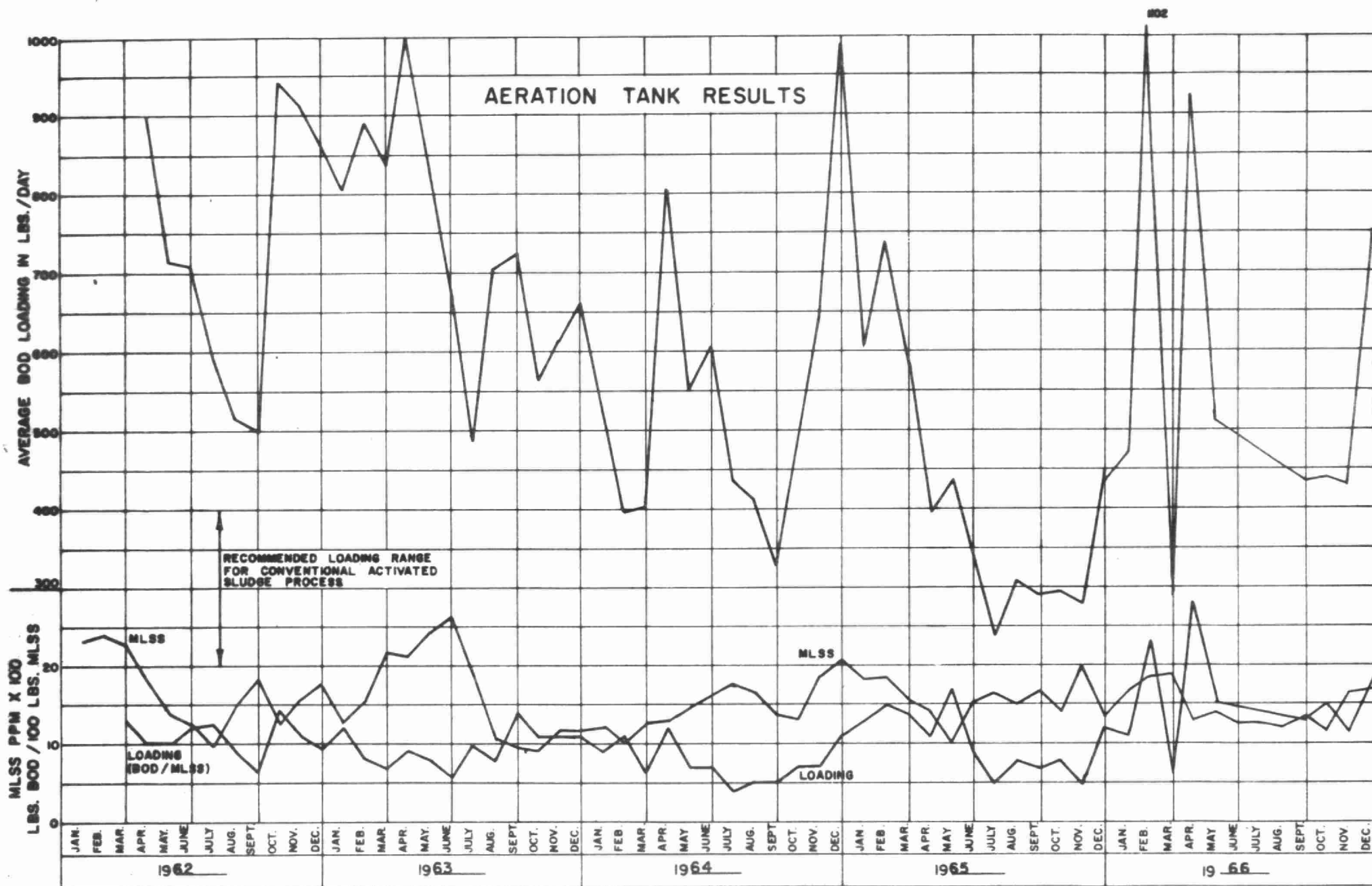
* Average values substituted. No samples.

COMMENTS

The average reduction of BOD concentration was 82%. The average final effluent BOD of 16 ppm was slightly higher than the OWRC objective of 15 ppm.

The average reduction of suspended solids concentration was 88.5%, producing an effluent with an average suspended solids concentration of 24 ppm, which was higher than the OWRC objective of 15 ppm.

During the year 266.1 cubic feet of grit were removed, averaging 0.74 cubic feet per million gallons of sewage.



AERATION SECTION

MONTH	PRIM. EFFL. B.O.D. PPM.	MLSS. PPM.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. BOD. REMOVED
JANUARY	48	1658	11	-
FEBRUARY	78	1829	23	-
MARCH	21	1852	6	-
APRIL	72	1270	28	-
MAY	47	1346	15	-
JUNE	-	1220	-	-
JULY	-	1251	-	-
AUGUST	-	1216	-	-
SEPTEMBER	54	1313	13	-
OCTOBER	61	1140	15	-
NOVEMBER	46	1559	11	-
DECEMBER	72	1611	17	-
TOTAL	-	-	-	-
AVERAGE	55	1439	15	-

COMMENTS

The average loading of 15 lbs. of BOD per 100 lbs. of MLSS was lower than the recommended 20 to 40 lbs. of BOD per 100 lbs. of MLSS for aeration section operation. The average BOD concentration to the aeration section of 55 ppm was less than 40 percent of the design BOD of 140 ppm.

It has not been considered advantageous to increase the ratio of lbs. of BOD to lbs. of MLSS. In order to increase this ratio, with the low BOD loadings, it would be necessary to reduce the lbs. of MLSS. This would render the plant quite susceptible to periodic shock loadings and foaming problems.

DIGESTER OPERATION

MONTH	SLUDGE TO DIGESTERS			SLUDGE FROM DIGESTERS			GAS PRODUCED 1000'S Cu. Ft.
	1000'S CU. FT.	% SOLIDS	% VOL. MAT.	1000'S CU. FT.	% SOLIDS	% VOL. MAT.	
JAN.	11.56	8.85	3.68	7.21	4.29	2.58	-
FEB.	16.10	11.55	5.46	7.94	7.60	1.97	-
MAR.	19.22	8.20	3.72	9.12	5.60	2.59	-
APR.	17.90	12.33	6.00	8.91	13.73	5.47	-
MAY	18.11	12.90	6.44	11.18	5.30	2.00	-
JUNE	15.62	12.98	6.36	12.47	13.50	4.91	-
JULY	17.34	8.77	5.09	12.47	8.20	3.17	-
AUG.	17.05	10.20	6.86	10.64	7.40	2.85	-
SEPT.	17.90	8.00	4.71	10.29	4.40	1.76	-
OCT.	20.00	7.75	4.66	20.17	4.75	2.06	-
NOV.	17.10	9.32	5.06	17.74	3.75	1.65	-
DEC.	16.84	-	-	21.63	-	-	-
TOTAL	204.74	-	-	149.77	-	-	-
AVG.	17.06	10.08	5.28	12.48	7.14	2.82	-

COMMENTS

A large amount of clay in the raw sewage was entrapped in the raw sludge and pumped to the digester, accounting for the low proportion of volatile solids of 52.8 percent. The reduction in volatile matter was consequently low, averaging 41.8 percent.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	30.376	869	2.86
FEBRUARY	31.177	826	2.65
MARCH	42.380	916	2.16
APRIL	38.409	837	2.18
MAY	33.845	934	2.76
JUNE	32.186	866	2.69
JULY	25.771	766	2.97
AUGUST	23.443	913	3.89
SEPTEMBER	24.172	908	3.76
OCTOBER	22.265	871	3.91
NOVEMBER	28.016	822	2.93
DECEMBER	31.431	922	2.93
TOTAL	363.471	10450	-
AVERAGE	30.289	871	2.88

COMMENTS

An average dosage of 2.88 ppm was sufficient to maintain a chlorine residual of 0.5 ppm.



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It is recommended that industrial wastes be controlled in order to allow the plant to more effectively treat the sewage.

The digester should be sealed so that the digester gas produced could be utilized for heating purposes.

Date Due

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